

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:	)	
	)	
Smeyne et al	)	
	)	
Serial No.: New	)	Examiner:
	)	
Filed: December 12, 2002	)	Attorney Docket No: 023868.43877
	)	
For: METHOD FOR DETERMINING	)	
SENSITIVITY TO	)	
ENVIRONMENTAL TOXINS AND	)	
SUSCEPTIBILITY TO	)	
PARKINSONS DISEASE	)	

**INFORMATION DISCLOSURE STATEMENT**

Mail Stop: DD  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Applicant hereby submits an information disclosure statement and an accompanying Information Disclosure Citation form (PTO-1449). The prior art references are as follows:

**Document AA** – U.S. Patent No. 6,287,854, issued to Spurr et al. on September 11, 2001 discloses a method for determining the susceptibility of a patient to cancer and treatment thereof while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AB** – U.S. Patent No. 6,268,184, issued to Gray et al. on July 31, 2001 discloses amplifications of chromosomal region 20Q12 as a prognostic indicator of breast cancer while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AC** – U.S. Patent No. 6,248,325, issued to Goli et al. on June 19, 2001 discloses a Human Glutathione S-Transferase (HGST).

**Document AD** – U.S. Patent No. 6,183,977, issued to Doyle et al. on February 6, 2001 discloses how to determine hepatic status of a liver transplant recipient by measuring pi glutathione s-transferase while applicant discloses how to determine sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AE** – U.S. Patent No. 6,177,546, issued to Yue et al. on January 23, 2001 discloses a human glutathione s-transferase (HGST) and methods for treating disorders associated with expression of HGST while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AF** – U.S. Patent No. 6,110,680, issued to Sutcliffe et al. on August 29, 2000 discloses a method for simultaneous identification of differently expressed mRNAs and measurement of relative concentrations while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AG** – U.S. Patent No. 6,080,551, issued to Doyle et al. on June 27, 2000 discloses an assay for the assessment of organ status based on the detection of one or more isoenzymes of glutathione s-transferase while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AH** – U.S. Patent No. 6,027,912, issued to Hall et al. on February 22, 2000 discloses the isolation and characterization of a gene encoding an invertebrate alpha1 calcium channel subunit while applicant discloses the identification of a gene encoding the protein glutathione S-transferase pi as being correlated with the susceptibility to neurotoxicity and concomitantly the risk to develop Parkinson's disease.

**Document AI** – U.S. Patent No. 5,935,790, issued to Poretz et al. on August 10, 1999 discloses a method for detecting the presence of arylsulfatase A pseudodeficiency mutations in humans, said mutations indicating a predisposition for susceptibility to neurotoxicity and/or susceptibility to toxicant's pathological effects while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AJ** – U.S. Patent No. 5,919,450, issued to Hillman et al. on July 6, 1999 discloses a glutathione s-transferase homolog and a method for treating cancer while applicant

discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AK** – U.S. Patent No. 5,879,884, issued to Peroutka on March 9, 1999 discloses the diagnosis of depression by linkage of a polymorphic marker to a segment of chromosome 19P13 bordered by D19S247 and D19S394 and method of diagnosing depression while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AL** – U.S. Patent No. 5,871,920, issued to Page et al. on February 16, 1999 discloses DAZ, a gene associated with Azoospermia while applicant discloses the identification of a gene encoding the protein glutathione S-transferase pi as being correlated with the susceptibility to neurotoxicity and concomitantly the risk to develop Parkinson's disease.

**Document AM** – U.S. Patent No. 5,866,782, issued to Iwabuchi et al. on February 2, 1999 discloses a gene which determines cytoplasmic sterility and a method of producing hybrid plants using said gene while applicant discloses the identification of a gene encoding the protein glutathione S-transferase pi as being correlated with the susceptibility to neurotoxicity and concomitantly the risk to develop Parkinson's disease and a method of determining sensitivity to environmental toxins and susceptibility to Parkinson's disease using said gene.

**Document AN** – U.S. Patent No. 5,773,236, issued to Diwu et al. on June 30, 1998 discloses an assay for glutathione transferase using polyhaloaryl-substituted reporter molecules while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AO** - U.S. Patent No. 5,427,917, issued to Hosoda et al. on June 27, 1995 discloses a method of determining human acid glutathione s-transferase, a reagent therefor, a kit therefor, a method of diagnosing cancer in digestive organs, and a monoclonal antibody for use therein while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AP** – U.S. Patent Application Publication No. US 2002/0034760 published on March 21, 2002, applicant, Kindness et al., discloses a combination and method presenting and

utilizing DNA analysis and for diagnosis and treatment of redox imbalance while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AQ** – Sheron Wylie-Modro et al., The Presence and Significance of the Pi Class Glutathione S-Transferase Isoenzyme in Cerebrospinal Fluid during the Course of Meningitis in Children, discloses the presence and significance of the pi class glutathione S-transferase isoenzyme in cerebrospinal fluid during the course of meningitis in children while applicant discloses the presence and significance of the pi class glutathione S-transferase as it relates to Parkinson's disease.

**Document AR** – Theo P.J. Mulder et al., Measurement of Glutathione S-Transferase P1-1 in Plasma, CANCER September 1, 1997 / Volume 80 / Number 5, pp. 873-880, discloses the role of glutathione s-transferase p1-1 as a plasma tumor marker in patients with gastrointestinal tumors while applicant discloses the role of glutathione S-transferase pi in determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AS** – Francis Ali-Osman et al., Prognostic Significance of Glutathione S-Transferase  $\pi$  Expression and Subcellular Localization in Human Gliomas, Clinical Cancer Research December 1997 / Volume 3 pp. 2253-61, discloses the prognostic significance of glutathione S-transferase  $\pi$  expression and Subcellular localization in human gliomas while applicant discloses the significance of glutathione S-transferase pi expression in determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AT** – Alessandra Menegon et al., Parkinson's disease, pesticides, and glutathione transferase polymorphisms, The Lancet October 24, 1998 / Volume 352 pp. 1344-46, discloses the role of glutathione transferase polymorphisms in the pathogenesis of idiopathic Parkinson's disease while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AU** – Kristin Hamre et al., Differential strain susceptibility following 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) administration acts in an autosomal dominant fashion: quantitative analysis in seven strains of *Mus musculus*, Brain Research 828

(1999) pp. 91-103, examines the toxicity of 1-methyl-4-phenyl-1,2,3,6,-tetrahydropyridine (MPEP) in seven strains of mice, spanning a genetic continuum of *Mus musculus* as a prelude to uncovering complex strains traits associated with MPTP toxicity while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AV** – Catherine L. Nutt et al., Differential Expression of Drug Resistance Genes and Chemosensitivity in Glial Cell Lineages Correlate with Differential Response of Oligodendrogliomas and Astrocytomas to Chemotherapy, *Cancer Research* September 1, 2000 / Volume 60, pp. 4812-18, discloses the differential expression of drug resistance genes and chemosensitivity in glial cell lineages correlate with differential response of oligodendrogliomas and astrocytomas to chemotherapy while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AW** – Michelle Smeyne et al., Strain-Dependent Susceptibility to MPTP and MPP<sup>+</sup>-Induced Parkinsonism Is Determined by Glia, *GLIA* 34:73-80 (2001), discloses using novel chimeric murine substantia nigra culture to demonstrate that sensitivity to MPTP is conferred by glia and that it does not involve the MAO-B conversion of MPTP to MPP<sup>+</sup>. The present invention discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AX** – Zhan-Li Yin et al., Immunohistochemistry of Omega Class Glutathione S-Transferase in Human Tissues, *The Journal of Histochemistry & Cytochemistry* Volume 49(8): 983-87 (2001), discloses immunohistochemistry of omega class glutathione s-transferase in human tissues while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AY** – Michelle Smeyne et al., Method for culturing postnatal substantia nigra as an in vitro model of experimental Parkinson's disease, *Brain Research Protocols* Volume 9: 105-111 (2002), discloses a method for generating mixed and chimeric neuron/glial cultures of postnatal substantia nigra (SN), independent of other monoaminergic nuclei in the ventral midbrain. This method is useful since many toxins do not affect regions of the midbrain except the SN and use of the whole ventral midbrain from embryos can dilute any measurement of cell

death. The present invention discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AZ** – Shinji Goto et al., Doxorubicin-induced DNA intercalation and scavenging by nuclear glutathione S-transferase  $\pi$ , The FASEB Journal Volume 15: 2702-14 December 2001, discloses the role of nuclear glutathione S-transferase  $\pi$  after examining the changes in the amount of nuclear GST $\pi$  after exposure of cancer cells to anticancer drugs while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AAA** – Raphe R.S. Kantor et al., Monoclonal Antibodies to Glutathione S-Transferase  $\pi$ —Immunohistochemical Analysis of Human Tissues and Caners, Int. J. Cancer: 47, 193-201 (1991), discloses monoclonal antibodies to glutathione S-transferase  $\pi$ —immunohistochemical analysis of human tissues and cancers while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

**Document AAB** – Tansey FA et al., Rapid upregulation of the Pi isoform of glutathione -S-transferase in mouse brains after withdrawal of the neurotoxicant, cuprizone, Mol. Chem., Neuropathol 1997 June 31 (2):161-70, discloses rapid upregulation of the Pi isoform of glutathione-S-transferase in mouse brains after withdrawal of the neurotoxicant, cuprizone while applicant discloses a method for determining sensitivity to environmental toxins and susceptibility to Parkinson's disease.

Applicants respectfully request that the Examiner consider the listed document and indicate that it was considered by making appropriate notations on the attached form.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that the listed documents are material or constitute "prior art." If the Examiner applies the document as prior art against any claim in the application and Applicants determine that the cited document does not constitute "prior art" under United States law, Applicants reserve the right to present to the office the relevant facts and law regarding the appropriate status of such documents.

Applicants further reserve the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should the documents be applied against the claims of the present application.

If there is any fee due in connection with the filing of this Statement, please charge the fee to our Deposit Account No. 50-0850.

In the event the Examiner has any questions regarding this document, please contact the undersigned at the telephone number listed below.

Respectfully Submitted,

Butler, Snow, O'Mara,  
Stevens & Cannada, PLLC

Date:

12-12-03

By:

Susann B. Fentress

Susann B. Fentress

Reg. No. 31,327

P.O. Box 171443

Memphis, TN 38187-1443

(901) 680-7319

# INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

Docket Number (Optional)

023868.43877

Application Number

New

Applicant(s)

Smeyne, et al.

Filing Date

December 12, 2002

Group Art Unit

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA	6,287,854	09/11/01	Spurr, et al.	435/320.1	435/69.1	08/05/97
	AB	6,268,184	07/31/01	Gray, et al.	435/91.2	435/6	04/24/98
	AC	6,248,325	06/19/01	Goli, et al.	424/94.5	424/9.34	05/11/99
	AD	6,183,977	02/06/01	Doyle, et al.	435/7.9	435/2	02/02/96
	AE	6,177,546	01/23/01	Yue, et al.	530/387.9	424/139.1	12/22/99
	AF	6,110,680	08/29/00	Sutcliffe, et al.	435/6	435/91.1	06/30/98
	AG	6,080,551	06/27/00	Doyle, et al.	435/7.4	435/15	04/02/96
	AH	6,027,912	02/22/00	Hall, et al.	435/69.1	435/252.3	01/19/95
	AI	5,935,790	08/10/99	Poretz, et al.	435/6	536/24.31	08/05/97
	AJ	5,919,450	07/06/99	Hillman, et al.	424/94.5	435/193	06/22/98
	AK	5,879,884	03/09/99	Stephen J. Peroutka	435/6	435/91.2	06/07/95

## FOREIGN PATENT DOCUMENTS

REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						YES	NO

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

AQ	Sheron Wylie-Modro et al. "The Presence and Significance of the Pi Class Glutathione S-Transferase Isoenzyme in Cerebrospinal Fluid during the course of Meningitis in Children" May 22, 1996
AR	Theo P.J. Mulder, et al. "Measurement of Glutathione S-Transferase PI-1 in Plasma" November 25, 1996

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



# **INFORMATION DISCLOSURE CITATION**

(Use several sheets if necessary)

ATTY DOCKET NO.

023868.43877

SERIAL NO.

New

Smeyne, et al.

FILING

December 12, 2002

GROUP

## **U.S. PATENT DOCUMENTS**

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AL	5,871,920	02/16/99	Page, et al.	435/6	435/91.1	07/31/96
	AM	5,866,782	02/02/99	Iwabuchi, et al.	800/205	800/DIG.	09/30/94
	AN	5,773,236	06/30/98	Diwu et al.	435/15	530/300	04/25/97
	AO	5,427,917	06/27/95	Hosoda, et al.	435/7.4	435/7.92	12/20/93
	AP	2002/0034760	03/21/02	Kindness, et al.	435/6	702/20	08/21/01

## **FOREIGN PATENT DOCUMENTS**

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO

## **OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)**

	AS	rancis Ali-Osman, et al. "Prognostic Significance of Glutathione S-Transferase xpression and Subcellular Localization in Human Gliomas" December 1997
	AT	Alessandra Menegon, et al. "Parkinson's Disease, Pesticides and Glutathione Transferase Polymorphisms" October 24, 1998

EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<b>INFORMATION DISCLOSURE CITATION</b> <i>(Use several sheets if necessary)</i>		Docket Number (Optional) <b>023868.43877</b>	Application Number <b>New</b>
		Applicant(s) <b>Smeyne, et al.</b>	
		Filing Date <b>December 12, 2002</b>	Group Art Unit

  

*EXAMINER INITIAL	OTHER DOCUMENTS	(Including Author, Title, Date, Pertinent Pages, Etc.)
AU		Kristin Hamre, et al. "Differential Strain Susceptibility Following 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) Administration Acts in an Autosomal Dominant Fashion: Quantitative Analysis in Seven Strains of Mus Musculus" (1999) pp. 91-103
AV		Catherine L. Nutt, et al. "Differential Expression of Drug Resistance Genes and Chemosensitivity in Glial Cell Lineages Correlate with Differential Response of Oligodendrogliomas and Astrocytomas to Chemotherapy" September 1, 2000 Volume 60, pp. 4812-18
AW		Michelle Smeyne, et al. "Strain-Dependent Susceptibility to MPTP and MPP+-Induced Parkinsonism Is Determined by Glia" GLIA 34:73-80 (2001)
AX		Zhan-Li Yin, et al. "Immunohistochemistry of Omega Class Glutathione S-Transferase in Human Tissues" The Journal of Histochemistry & Cytochemistry Volume 49(8): 983-87 (2001)
AY		Michelle Smeyne, et al. "Method for Culturing Postnatal Substantia Nigra as an In Vitro Model of Experimental Parkinson's Disease" Brain Research Protocols Volume 9: 105-111 (2002)
AZ		Shinji Goto, et al. "Doxorubicin-induced DNA Intercalation and Scavenging by Nuclear Glutathione S-Transferase" The FASEB Journal Volume 15: 2702-14 December, 2001
AAA		Raphe R.S. Kantor, et al. "Monoclonal Antibodies to Glutathione S-Transferase - Immunohistochemical Analysis of Human Tissues and Caners" Int. J. Cancer: 47, 193-201 (1991)
AAB		Tansey FA, et al. "Rapid Upregulation of the Pi Isoform of Glutathione S-Transferase in Mouse Brains After Withdrawal of the Neurotoxicant, Cuprizone" Mol. Chem. Neuropathol 1997 June 31 (2):161-70
EXAMINER		DATE CONSIDERED

\*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.